

I n t e g r i t y - S e r v i c e - E x c e l l e n c e



**D&SWS Technology
Development
Orientation Brief
for
2008 Technology Maturity
Conference
11 Sep 2008**

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Report Documentation Page			Form Approved OMB No. 0704-0188					
<p>Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.</p>								
1. REPORT DATE 11 SEP 2008	2. REPORT TYPE	3. DATES COVERED 00-00-2008 to 00-00-2008						
4. TITLE AND SUBTITLE D&SWS Technology Development Orientation Brief for 2008 Technology Maturity Conference			5a. CONTRACT NUMBER					
			5b. GRANT NUMBER					
			5c. PROGRAM ELEMENT NUMBER					
6. AUTHOR(S)			5d. PROJECT NUMBER					
			5e. TASK NUMBER					
			5f. WORK UNIT NUMBER					
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) AFRL/XP,1864 Fourth St,Wright Patterson AFB,OH,45433			8. PERFORMING ORGANIZATION REPORT NUMBER					
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)			10. SPONSOR/MONITOR'S ACRONYM(S)					
			11. SPONSOR/MONITOR'S REPORT NUMBER(S)					
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited								
13. SUPPLEMENTARY NOTES See also ADM002183. Presented at the Technology Maturity Conference held in Virginia Beach, Virginia on 9-12 September 2008.								
14. ABSTRACT								
15. SUBJECT TERMS								
16. SECURITY CLASSIFICATION OF: <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; padding: 2px;">a. REPORT unclassified</td> <td style="width: 33%; padding: 2px;">b. ABSTRACT unclassified</td> <td style="width: 33%; padding: 2px;">c. THIS PAGE unclassified</td> </tr> </table>			a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified	17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 19	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified						



Overview

- D&SWS – An Air Force Core Process
- Technology Development (TD) Core Sub-Process
 - The Problem – Our Solution
 - How We Birthed the Three Initiatives



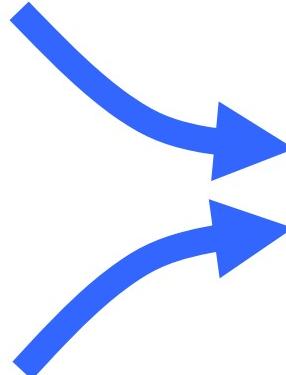
AFSO21/D&SWS is Part of the Answer



Funding Our Priorities

"We will fund transformation through ... organizational efficiencies, process efficiencies, reduction of legacy systems and manpower while sustaining GWOT and ongoing operations in support of the Joint Fight."

- Michael W. Wynne, SECAF



Integrity - Service - Excellence 1

The Status Quo is Out

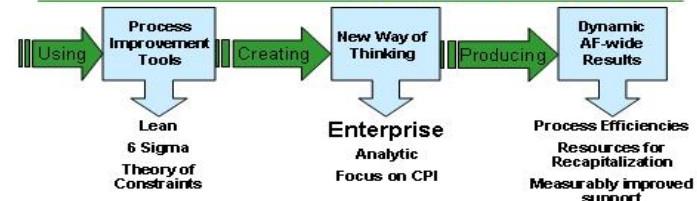
AFSO21

- The USAF will do less with less
- Do what is valued by our customers
- Employ tools and techniques smartly to reduce waste and non-value-added work, to maximize value to the warriors

Integrity - Service - Excellence 4



Air Force Smart Ops 21 = AF S O 21
Who How Where When



Integrity - Service - Excellence 4

CSAF Approved Process Owners

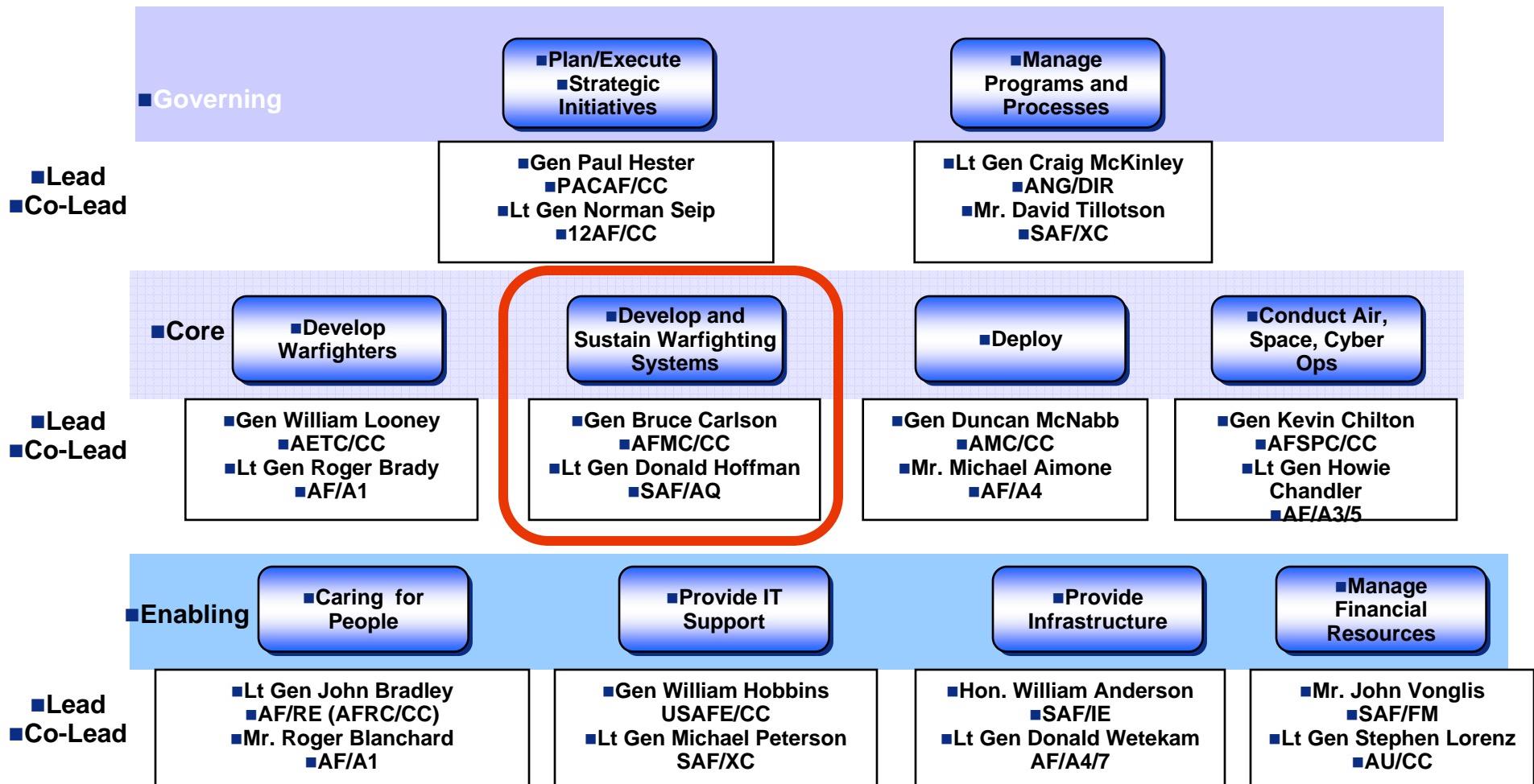


■ Develop and Sustain
■ Warfighting Systems (D&SWS)

Integrity - Service - Excellence



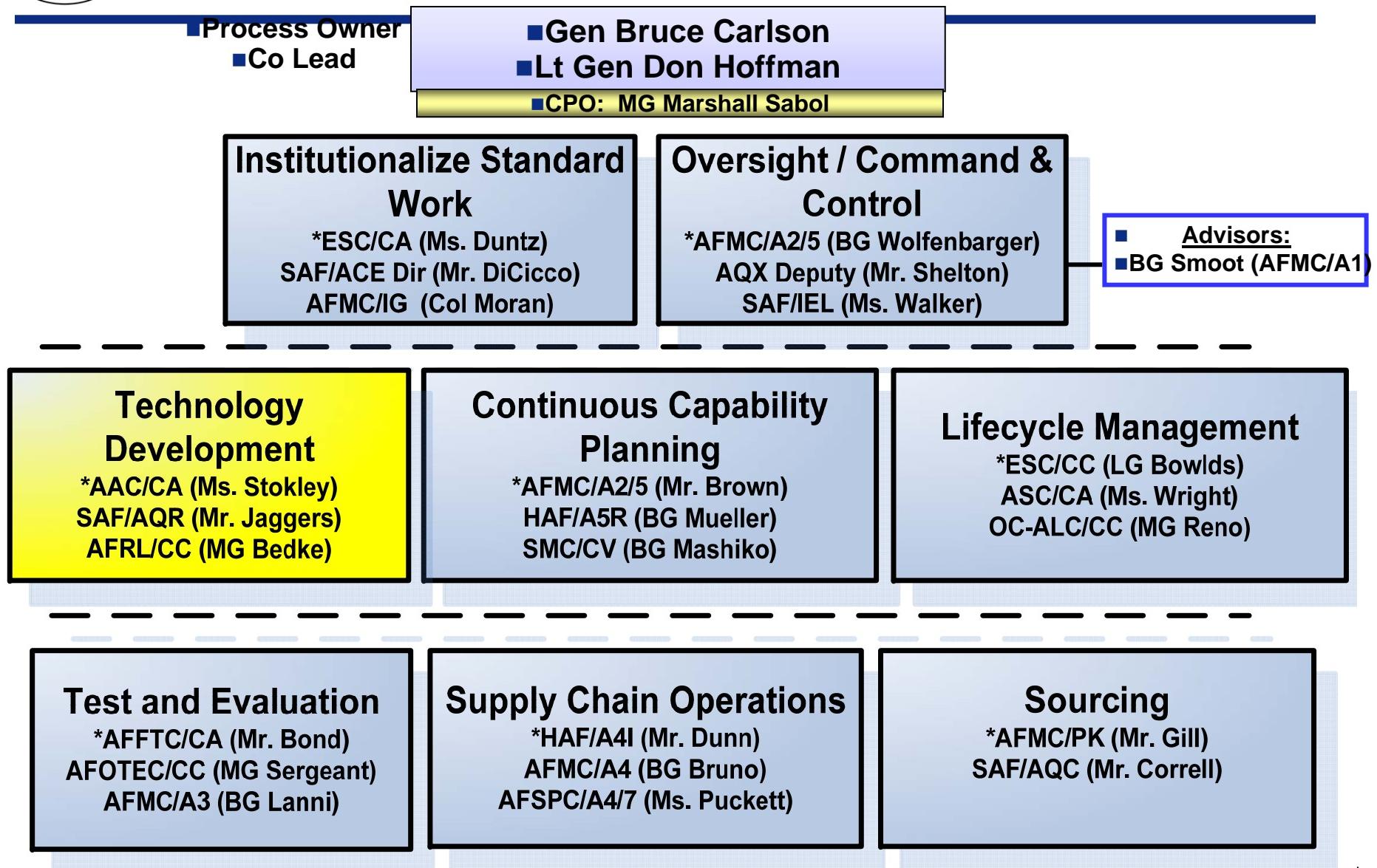
SECAF / CSAF Approved Air Force Process Owners



Integrity - Service - Excellence



D&SWS Sub-Process Teams (Jun '08)





TD Charter

- TD Initiatives Target 2 Key Problems:
 - Immature Technology in Acquisition Programs Leads to Cost Growth and Schedule Slip
 - Many Unprioritized Needs Lead to Sub-optimized Investments

■ Approach

- Implement 3 TD Initiatives to Institutionalize One AF Level Process to Manage Investments in Technologies to Ensure They are Mature for AF Systems
- Provide “Standard Work” In the Technology Development Arena Where It Makes Sense



TD History

How We Birthed...and How We are Implementing Our Initiatives

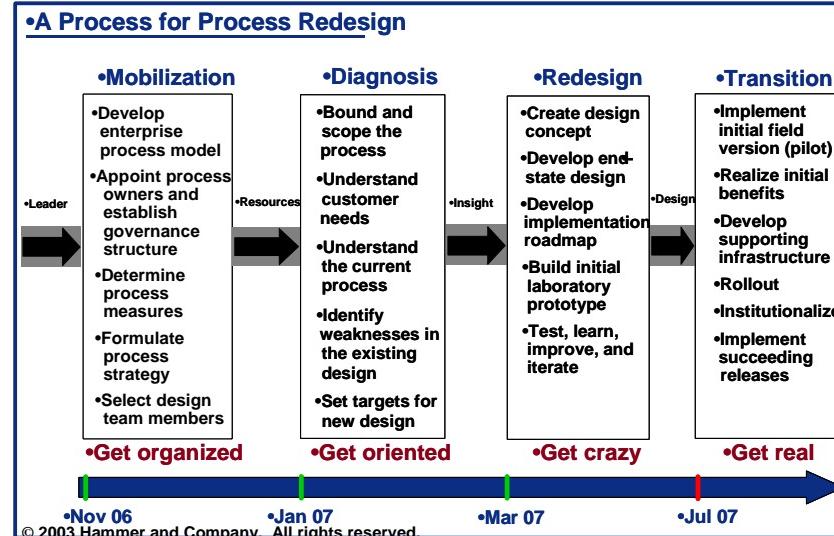
- 6 Dec 06 Design Team Kickoff Meeting
- Large & Diverse Team
- Process-Reengineering Mandate
 - Lean Focus
 - EVSM, SIPOC
 - Diagnosis, Re-design, Transfer of Ownership
- Diagnosis:
 - TD is unwieldy AF process w/many stakeholders & confusion
 - Lean: Value-Added & Non-Value-Added Analysis 😟
 - Root Cause Analysis (5 Whys) 😊
- Re-Design
- Transfer of Ownership to AF Functional Orgs



Process-Reengineering Summary

Issues and Opportunities	On Track / On Cost	Requires Additional Effort	Requires Extra Time
Institutionalize Standard Work			
Lack of integrated policy deployment & interpretation process			✓
Lack of consistent policy & process compliance		✓	✓
Inconsistent process execution		✓	✓
Oversight / Command and Control			
Policy process takes too long and content			✓
Decision authority often unclear		✓	✓
Gap - No existing LCM enterprise	✓	✓	✓
LCM Program Decision	✓	✓	✓
LCM Performance	✓	✓	✓
Technology			
IT infrastructure and tech needs		✓	✓
IT skills gap	✓	✓	✓
Training	✓	✓	✓
Independent Advisor and Honest Broker (TD13)	✓	✓	✓
Change Management			
Ability Planning			
Lack of ability to program linkage			✓
Lack of disciplined requirements process			
Lack of requirements / budgeting stability	✓		
Lifecycle Management			
Low confidence SDD proposals	✓		
Low confidence AF Program Baseline	✓		
Insufficient Execution & Technical Leverage	✓		
Test & Evaluation			
Need for qualified T&E personnel	✓		
Need for consistent T&E processes	✓		
Supply Chain Operations			
Absence of an Enterprise View		✓	
Fragmented Planning Processes	✓	✓	
Lack of Integration	✓	✓	
No Enterprise System Strategy	✓	✓	
Sourcing			
Ineffective & inefficient acquisition of services	✓	✓	✓
Ineffective & inefficient J&A review and approval process	✓	✓	✓
Supplier relationship Mgt (Strategic view)	✓	✓	✓
Issues/Opportunities Total	12	11	14

"GO FIX" List



End-to-end Assessment Complete:

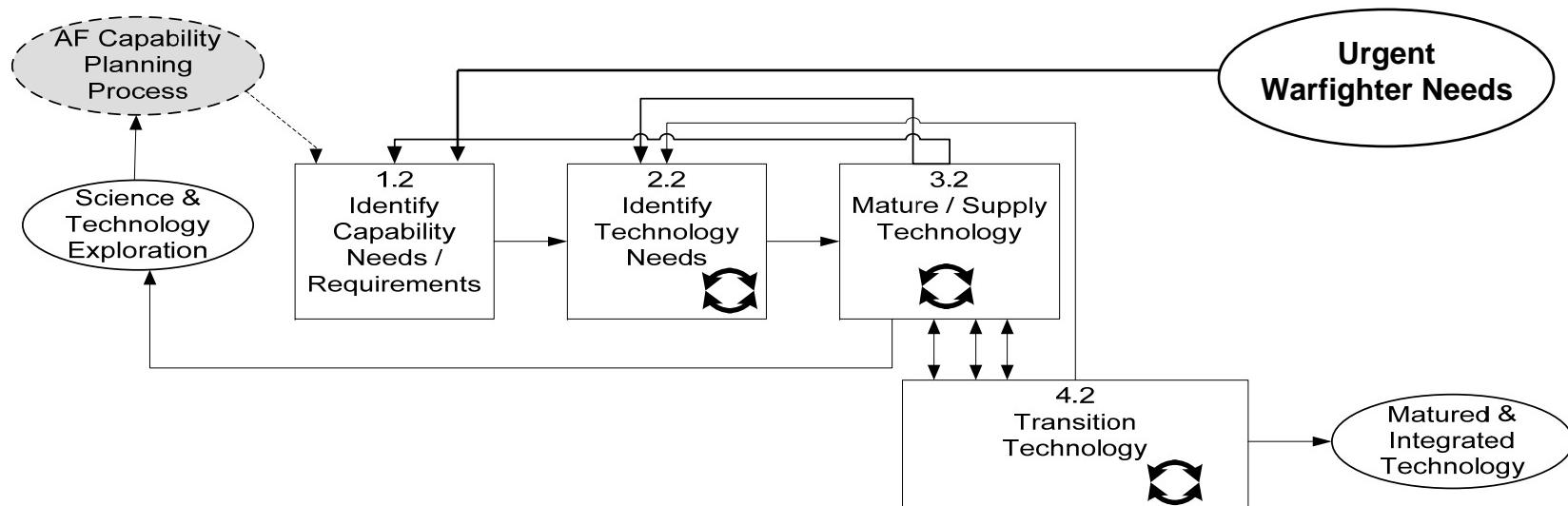
- Significant value-stream analyses and process mapping conducted
- Identified 27 issues / opportunities
- Created "To-Be" state for process redesign
- Multiple process improvement initiatives aligned under 4 Focus Areas
- Measure success against 3 customer-oriented objectives



Tech Development

As-Is Process: Issues & Opportunities

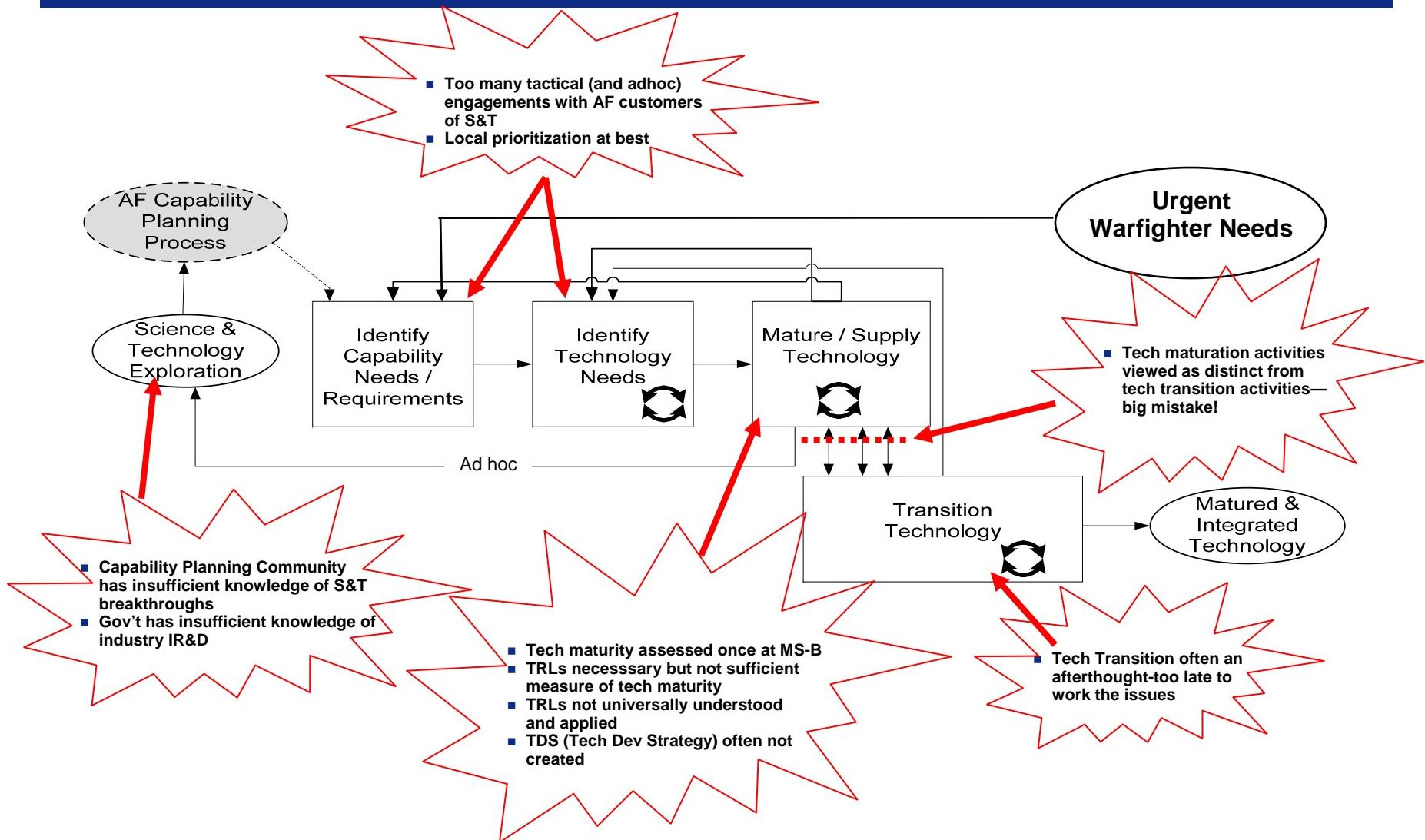
Briefed to D&SWS Process Council Spring 07



- As-is Process is not well understood; involves many stakeholders; is not conducive to strong and consistent collaboration
- 16 Issues/Opportunities Identified and Prioritized
 - Four principal areas to focus:
 - Identifying and prioritizing technology investment needs and communicating what we are doing
 - More comprehensive and effective technology maturity assessment
 - Earlier and more responsive Technology Transition Planning
 - Establishing AFRL as the AF's Trusted Advisor and Honest Broker

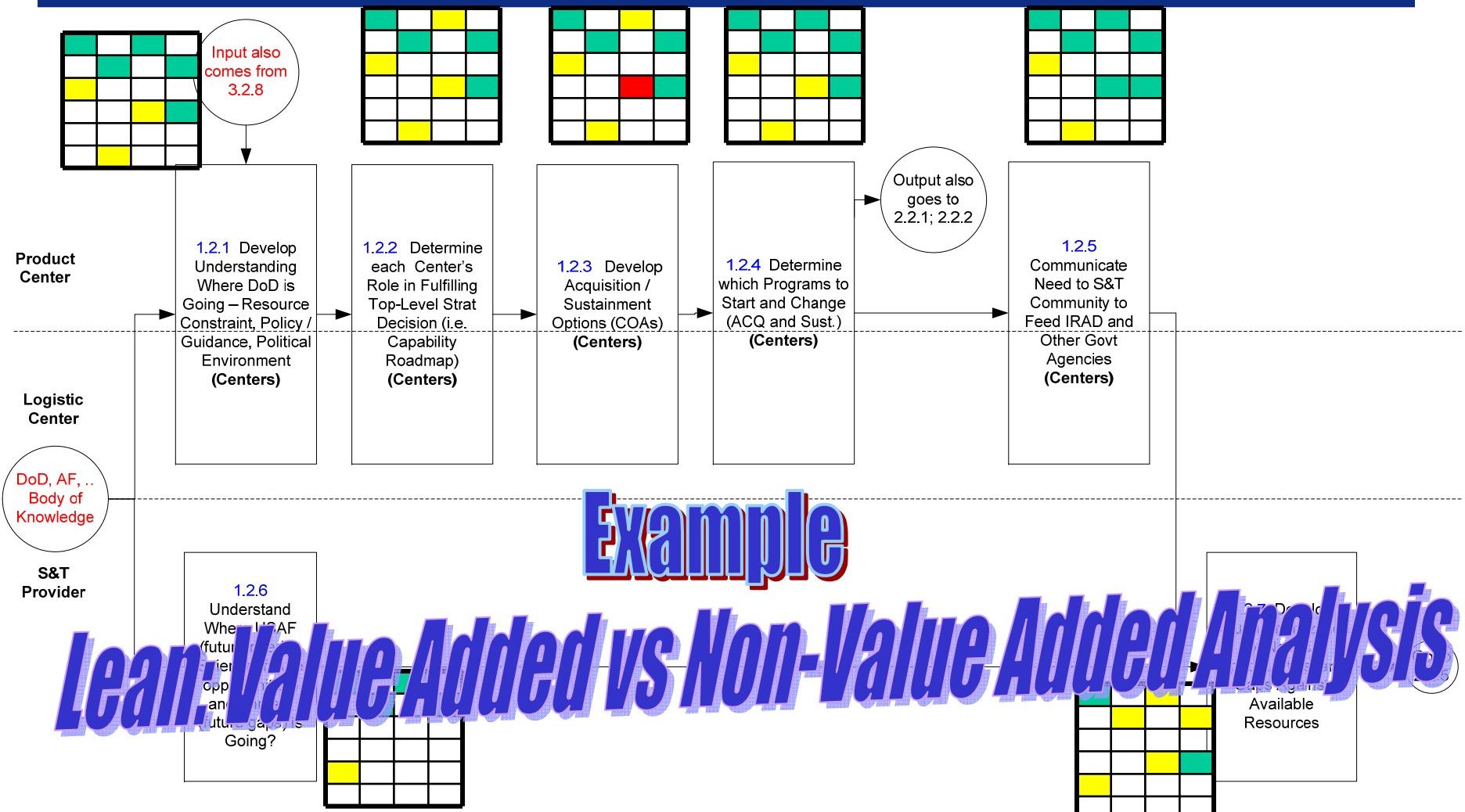


Tech Development As-Is Process: Many Issues





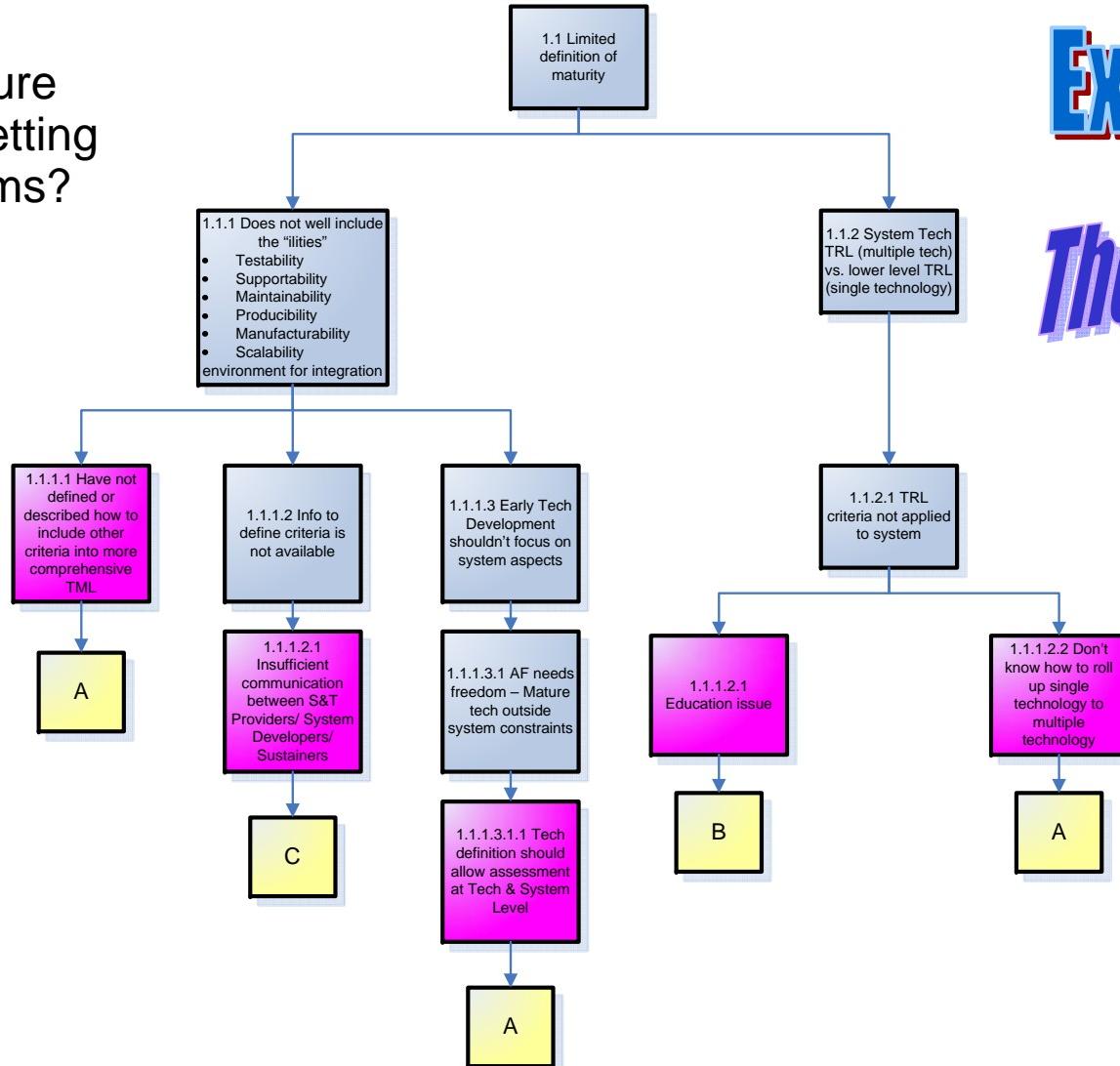
“Lean” Was of Limited Value in Identifying the Problems





Root Cause Analysis Helped Us Zero-In on the Real Issues

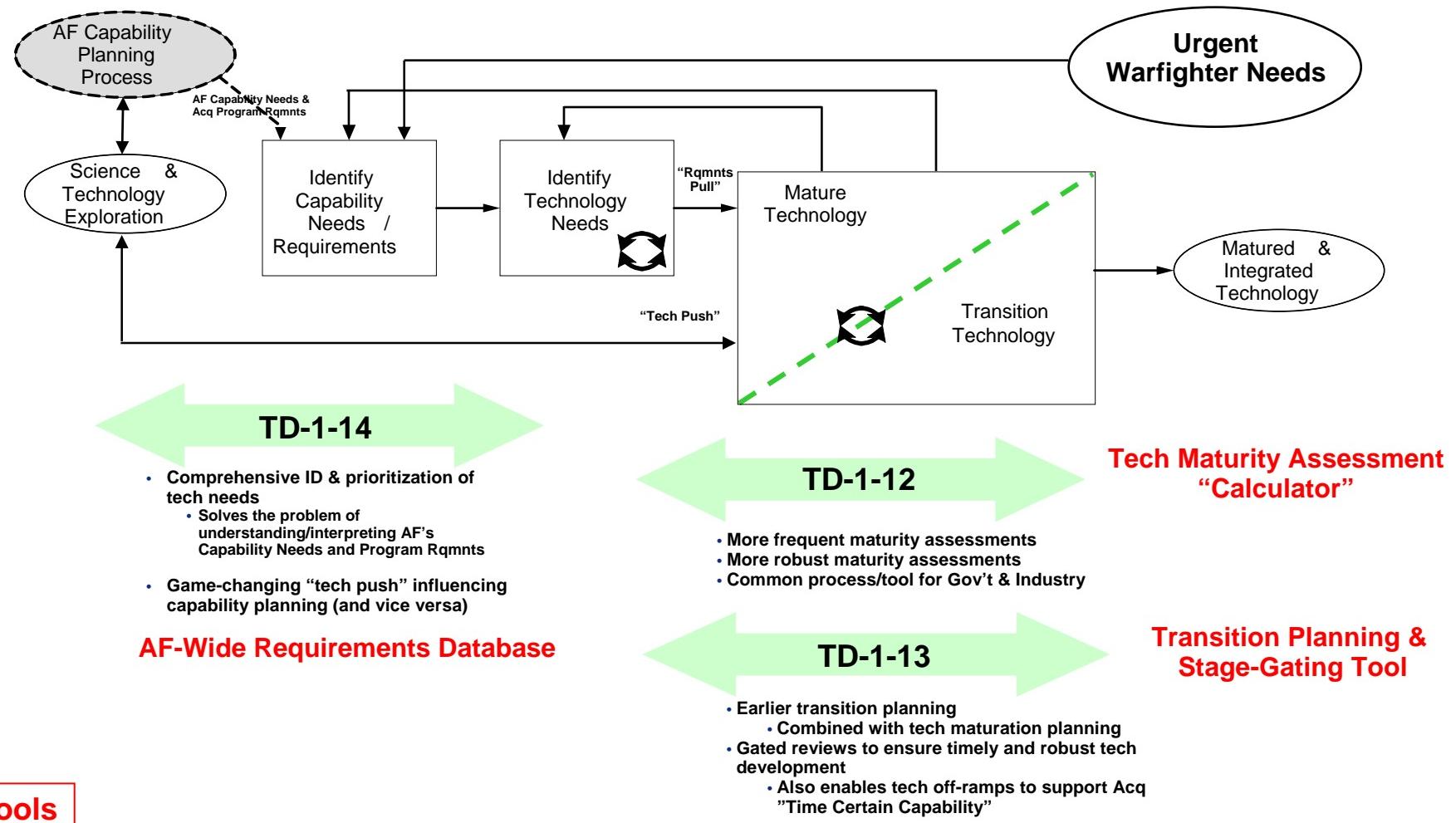
Why Is Immature
Technology getting
Into our systems?



Example
The 5 Whys



Tech Development “To-Be” Process Opportunities for Improvement



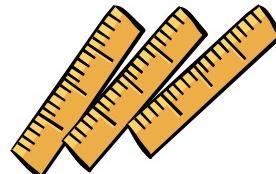


Three TD Initiatives

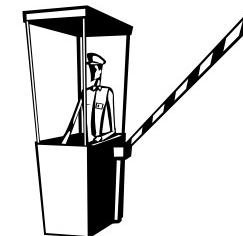
3 Initiatives with the goal of institutionalizing one AF level process to manage investments in technologies to ensure they are mature for AF systems

■ **TD-1-12 Improved Technology Maturity Assessments**

- Improved, but Separate, Qualitative Maturity Assessments
 - TRA Training
 - MRA Training
- Improved Software TRL descriptions
- A methodology to help identify Technical Risks related to Integration & Utilities



■ Helpful to....



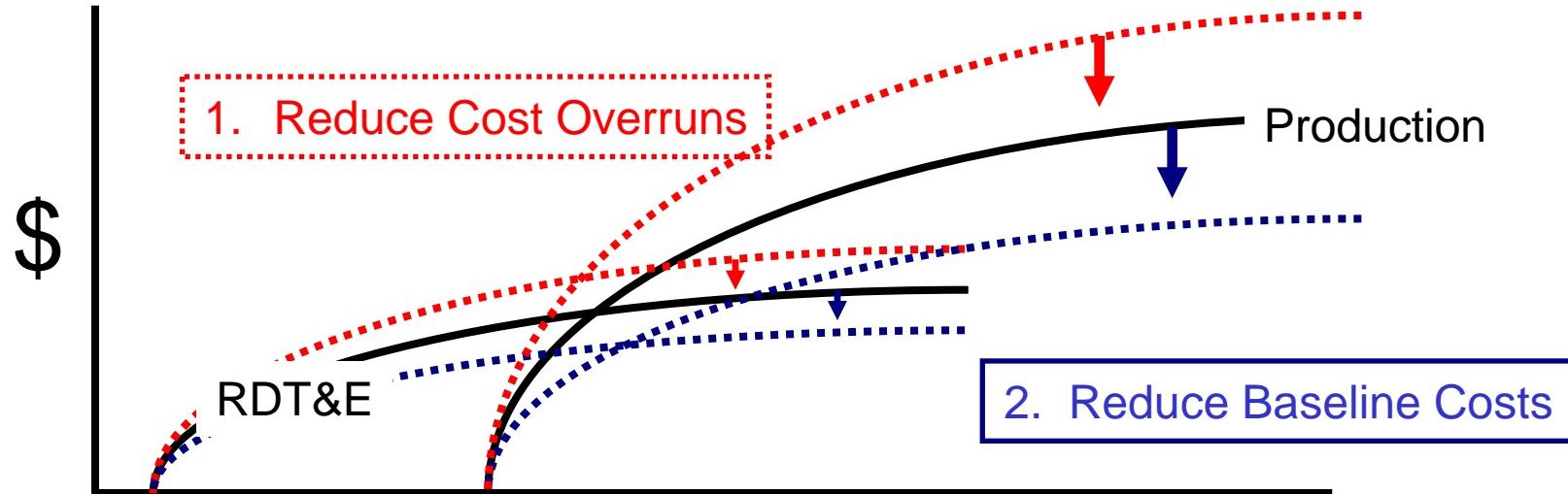
■ **TD-1-14 Identify and Prioritize Tech Needs**

- Focus S&T on highest priority needs
 - Integrate/align existing processes to identify tech needs
 - Develop new process to prioritize short, mid, and far-term needs vice a single “1-n” list
- Game-changing “Tech Push” influencing capability planning





Two Benefits to Solving the “Immature Technology” Problem



The ability to more accurately assess the maturity of technology, across dimensions more meaningful to acquisition & sustainment programs promises 2 benefits:

1. Pre-MS-B: More accurate assessment of tech maturity guides more complete tech development and enables more accurate program estimates (RDT&E and Production)
Result: Reduction in Cost Overruns (cost avoidance)
- \$1B-\$3.5B per year with an ROI of 2.6-4.2 (GAO report)
2. Post-MS-B: Targeted tech assessments within on-going programs may offer timely (and previously unknown) tech alternatives
Result: Reductions in projected [budgeted] costs (cost avoidance)
- Specific examples available (F-22 AESA with ROI of 76:1, etc.)



Pay Me Now (\$) or Pay Me Later (\$\$)

- **It costs money to save money**
- **It also costs money today to avoid future cost overruns**
- **TD (and other D&SWS initiatives) are proposing initiatives that will drive additional costs earlier in the development cycle**
 - For TD-1-12 & 13, this means additional RDT&E funding to mature technologies more robustly...earlier...so they are MATURE when they get into acquisition programs



Want to Change Behavior? Train the Workforce!

- All three TD initiatives propose new processes/tools that will require workforce training
- Both DAU and AFIT have a critical roles
- TD initiatives will develop required workforce training:
 - **Advanced training** for personnel working, or about to work, the new processes/tools (TD-1-12 Only for TRAs and MRAs)
 - **General Awareness training** appropriately tailored to fit into the many existing DAU and AFIT S&T/ Acquisition/ Sustainment “Familiarization” courses

	Advanced Training	General Awareness Training
Computer-Based	AFIT	DAU & AFIT
Classroom	AFIT	DAU & AFIT



Are We Sure Our Process-Improvement Initiatives Will Achieve Desired Affect?

- TD-1-12 and TD-1-13 will participate in D&SWS pathfinders
 - Five Pre-MS B AF Acquisition Programs Designated as Pathfinders

Seven D&SWS Initiatives to be “Tested”

- LCM-1-7: Time Certain Capability
- LCM-1-8: High Conf Baselines
- LCM-1-9: Life Cycle Affordability Planning
- CCP-1-10: Time-Phased Requirements Development
- TD-1-12: Improved Technology Maturity Assessments
- TD-1-13: High Confidence Technology Transitions
- TE-1-16: T&E Milestone B Support

- New TD processes will be integrated into an existing schedule as expeditiously and cost-effectively as possible
- However...D&SWS pathfinders will provide limited verification and validation of TD initiatives
 - Will not sufficiently exercise TD's process improvements
- Additional pilots will be required (Some of AFRL's 6.3 portfolio)



Summary

- We diagnosed the problem
 - Why/How is Immature Technology Getting into Weapon Systems?
- We proposed solutions - Process-Improvement Initiatives Designed to:
 - More robustly Assess Technology Maturity (TD-1-12)
 - Plan Transition Earlier & Be More Disciplined in Implementing Those Plans (TD-1-13)
 - “Plan the Flight...Fly the Plan!”
- Tools, Training, Policy Will Facilitate Implementation
- Getting Ready to “Test our Products”